

## CLAIM LISTING

This listing of claims will replace all prior versions, and listings, of claims in the present application:

Claims 1-4 (Cancelled).

5. (Currently Amended) An apparatus for a high-temperature industrial process, comprising:

- a) an inlet piping section with a first cross-sectional dimension;
- b) a downstream process section with a second cross-sectional dimension;
- c) an inlet transition section connecting the inlet piping section and downstream process section;

wherein the inlet transition section comprises internal insulation comprising refractory ceramic fiber and wherein the internal insulation forms a conical interior surface within said inlet transition section.

6. (Original) The apparatus of claim 5 wherein the second cross-sectional dimension is larger than the first cross-sectional dimension.

Claim 7 (Cancelled).

8. (Currently Amended) The apparatus of claim [[7]] 5 wherein the inlet transition section comprises a domed geometry.

9. (Currently Amended) The apparatus of claim 8 wherein the inlet transition section is a reactor head comprising a flanged connection to the downstream process section.

10. (Currently Amended) The apparatus of claim [[7]] 5 wherein the inlet transition section comprises a conical geometry.

11. (Original) The apparatus of claim 10 wherein the inlet transition section is a reactor head comprising a flanged connection to the downstream process section.

12. (Original) The apparatus of claim 5 further comprising one or more sight glass nozzles.

13. (Currently Amended) The apparatus of claim 5, wherein a laminar velocity profile is achieved in the downstream process section using at least one of:

- a) a sufficient length of straight pipe comprising the inlet piping section to provide laminar flow at an upstream end of the inlet transition section;
- b) at least one [[CRV]] flow straightener comprising a rotation vane and disposed within the inlet piping section;
- c) [[an LAD]] a large angle diffuser at the upstream end of the inlet transition section;
- d) an [[EHD]] elliptical head diffuser at the upstream end of the inlet transition section;  
and
- e) a conical interior surface comprising the transition section.

Claims 14-17 (Cancelled).

Claims 18-21 (Cancelled).

22. (Currently Amended) An apparatus for a high-temperature industrial process comprising:

- a) an inlet piping section;
- b) an inlet transition section;
- c) a process section;
- d) an outlet transition section; and
- e) an outlet piping section;

wherein internal insulation is included in one or more of said [[the apparatus]] sections a)-e), and wherein the insulation comprises refractory ceramic fiber and wherein the internal insulation forms an interior surface within said one or more of said sections a)-e).

23. (Currently Amended) The apparatus of claim 22 wherein the internal insulation is positioned within said inlet transition section [[further comprises]] and forms a conical interior surface therein.

24. (Currently Amended) The apparatus of claim 22 wherein the internal insulation is positioned within said outlet transition section [[further comprises]] and forms a conical interior surface.

25. (Original) The apparatus of claim 22 further comprising a flanged connection having first and second flanges between the inlet transition section and the process section.

26. (Original) The apparatus of claim 25 wherein at least one of first and second flanges includes a cooling jacket attached thereto.

27. (Original) The apparatus of claim 25 wherein at least one of first and second flanges includes at least one support lug.

28. (Original) The apparatus of claim 22 further comprising a flanged connection having first and second flanges between the process section and the outlet transition section.

29. (Original) The apparatus of claim 28 wherein at least one of first and second flanges includes at least one support lug.

30. (Original) The apparatus of claim 28 wherein at least one of first and second flanges includes a cooling jacket attached thereto.

31. (Original) The apparatus of claim 22 wherein the inlet transition section further comprises at least one sight glass nozzle.

32. (Original) The apparatus of claim 22 wherein the working elevation of the process section is between about 2.0 and 3.5 feet.

33. (Original) The apparatus of claim 22 wherein the process section further comprises at least one instrument nozzle.

Claim 34 (Cancelled).

35. (Currently Amended) A process of producing hydrogen cyanide comprising:

- a) providing at least one hydrocarbon, at least one nitrogen containing gas, and at least one oxygen containing gas;
- b) reacting the at least one hydrocarbon, at least one nitrogen containing gas, and at last one oxygen containing gas in an apparatus to form hydrogen cyanide, and
- c) supplying heat by a simultaneous combustion reaction with the at least one oxygen containing gas in the apparatus;

wherein the apparatus comprises:

an inlet piping section with a first cross-sectional dimension;

a downstream process section with a second cross-sectional dimension; and

an inlet transition section connecting the inlet piping section and downstream process section;

wherein the inlet transition section comprises internal insulation comprising refractory ceramic fiber and wherein the internal insulation forms a conical interior surface within said inlet transition section.

Claims 36-47 (Cancelled).

Claims 48-54 (Cancelled).

Claims 55-66 (Cancelled).